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coated thereon and contains binders, a porous inorganic oxide and an aliphatic hydroxycarboxylic acid with more than 2 C atoms; wherein said porous inorganic oxide is colloidal aluminum oxide, colloidal aluminum oxide/hydroxide or pseudo-bohemite and further includes at least one element of the rare earth metal series of the periodic system of the elements with atomic numbers 57 to 71.

R E M A R K S

All, claims pending, namely 1-3, 5, 8, 9, and 11-21 stand rejected under obviousness grounds.

Specifically, claims 1-3, 5, 8, 9, 11-19 and 21 are rejected under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 6,156,419 to Brugger et al. in view of U.S. Patent 5,942,335 to Chen et al. Claim 20 stands rejected as being unpatentable over Brugger et al. in view of Chen et al. as applied to claims 1-3, 5, 8, 9, 11-19 and 21 and in view of U.S. Patent 6,284,339 to Floegel or U.S. Patent 6,153,305 to Uemura or to U.S. Patent 6,156,606 to Kasahara et al.

Brugger et al. is directed to a recording sheet for ink jet printing comprised of a support and at least one ink receiving layer. The ink receiving layer contains at least one binder and a porous aluminum oxide/hydroxide comprised of at least one element of the rare earth metal series with atomic numbers 57 to 71. The Examiner acknowledges that Brugger et al. does not disclose the use of a hydroxycarboxylic acid, such as lactic acid, in its recording sheets, but points to Chen et al. to provide the missing disclosure. More specifically, the Examiner asserts that Chen et al. disclose acetic acid and lactic acid as hardening agents which produce a tough ink-receiving layer and control ink-spreading. Applicant respectfully disagrees.

Chen et al. teaches that to produce an ink receiving layer of optimum toughness and to control ink spreading it is desirable to cross-link poly(vinyl alcohol) and poly(4-vinyl pyridine) with

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a diepoxy cross-linking agent. Contrary to the Examiner's statement, Chen et al. does not use acetic acid or lactic acid as a cross-linking agent or hardener, rather, Chen et al. state that it may be desirable to include an acid to solubilize poly(4-vinylpyridine). The addition of acetic or lactic acid is therefore optional. In fact, the reference states that cross-linking can still occur to a satisfactory degree with acid, implying that cross-linking would be to a greater degree without acid (col. 6, lns. 10-12).

Chen et al. does not distinguish between the use of acetic or lactic acid. As evident by Example 4 and comparative Example 1 of Applicant's invention, when lactic acid is added to the recording sheets comprised of porous inorganic oxide the light stability of the resulting recording sheet is greatly improved in comparison to the addition of acetic acid (See Table 3). Chen et al. is silent with respect to the light stability of its recording sheets.

It is well-settled that the mere fact that the prior art could be modified to form the invention would not make that modification obvious unless the prior art suggested the desirability of the modification. In re Laskowski, 10 U.S.P.Q. 2d 1397, 1398 (Fed. Cir. 1989); In re Gordon, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed Cir. 1984). There is no teaching or suggestion in Brugger et al. to incorporate an aliphatic hydroxycarboxylic acid with more than 2 C atoms to its ink recording sheet, let alone a suggestion that such an addition would result in the improved light stability of the present invention.

Thus, it would not have been obvious to combine the teachings of Brugger et al. with Chen et al. Applicant submits that the obviousness rejection has been overcome.

Because the present invention is not rendered obvious by the combination of Brugger et al and Chen et al., the rejection of

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claim 20 based on Brugger et al. and Chen et al. in combination with Floegel et al., Uemura et al. and Kasahara et al. has also been overcome.

Accordingly, Applicant respectfully requests that the Examiner's obviousness rejections be withdrawn.

Applicant has amended claim 1 to correct a typographical error. Applicant has also amended the specification to correct a typographical error, specifically, a European patent number was cited incorrectly. No new matter has been introduced by these amendments.

Applicant submits that this application is now in condition for allowance. A clean copy of the amended claims and specification in compliance with 37 CFR 1.121 (b) and (c) is also enclosed. No new matter has been introduced by this Amendment. Reconsideration of this application and allowance of the pending claims are hereby requested.

Respectfully submitted,

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1. (Thrice Amended) A recording sheet for ink jet printing comprising a support wherein at least one ink receiving layer is coated thereon and contains binders, a porous inorganic oxide and an aliphatic hydroxycarboxylic acid with more than 2 C atoms; wherein said porous inorganic oxide is colloidal aluminum oxide, colloidal aluminum oxide/hydroxide or pseudo-bohemite and further includes at least one element of the rare earth metal series of the periodic system of the elements with atomic numbers 57 to 71.
2. (Amended). A recording sheet according to claim 1 wherein said aliphatic hydroxycarboxylic acid with more than 2 C atoms is a water soluble monohydroxymonocarboxylic acid.
3. (Amended). A recording sheet according to claim 2 wherein said water soluble monohydroxymonocarboxylic acid is 2-hydroxypropionic acid.
4. (Canceled). A recording sheet according to claim 1 wherein said porous inorganic oxide is colloidal aluminum oxide or colloidal aluminum oxide/hydroxide.
5. (Twice Amended) A recording sheet according to claim 1 wherein said porous inorganic oxide is colloidal γ - Al_2O_3 .
6. (Canceled). A recording sheet according to claim 1 wherein said porous inorganic oxide is pseudo-bohemite.
7. (Canceled). A recording sheet according to claim 1 wherein said porous inorganic oxide is AlOOH or pseudo-bohemite; and further includes at least one element of the rare earth metal series of the periodic system of the elements with atomic numbers 57 to 71.
8. (Amended). A recording sheet according to claim 7 wherein said pseudo-bohemite is prepared by hydrolysis of aluminum isopropoxide in the presence of the hydroxycarboxylic acid.
9. (Amended). A recording sheet according to claim 1 to wherein said binders are gelatine, polyvinyl alcohol or polyvinyl pyrrolidone or mixtures thereof.
10. (Canceled). Coating compositions for the preparation of ink receiving layers for recording sheets for ink jet printing according to claims 1 to 9.
11. A recording sheet according to claim 7 wherein said element is present in an amount of from 0.04 to 4.2 mole percent relative to Al_2O_3 .
12. A recording sheet according to claim 1 further comprising water soluble metal salts selected from the group consisting of alkaline earth metal salts and rare earth metal salts.

13. A recording sheet according to claim 12 wherein said rare earth metal salt is lanthanum nitrate.
14. A recording sheet according to claim 1 further comprising cross-linking agents.
15. (Amended). A recording sheet according to claim 1 further comprising fillers selected from the group consisting of kaolin, talcum, Ca- or Ba-carbonates, silica, titanium dioxide, bentonite, zeolite, aluminum silicate, calcium silicate or colloidal silicium dioxide and polymer beads.
16. A recording sheet according to claim 1 further comprising at least one or more of a compound selected from the group consisting of surfactants, brightening agents, UV absorbers, light stabilizers and antioxidants.
17. A recording sheet according to claim 1 wherein said porous inorganic oxide and said aliphatic hydroxycarboxylic acid with more than 2 C atoms are in the same layer.
18. (Amended). A recording sheet according to claim 1 further comprising an auxiliary layer which includes a porous inorganic oxide and or an aliphatic hydroxycarboxylic acid with more than 2 C atoms.
19. (Amended). A recording sheet according to claim 1 wherein the coating on said support has a thickness in the range of 0.5 to 100 μm dry thickness.
20. A recording sheet according to claim 1 wherein said support is coated with an antistatic layer or an anticurl layer on the uncoated support surface.
21. A recording sheet according to claim 1 further comprising fillers selected from the group consisting of inorganic inert particles.

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Patent application EP 0,685,345 proposes the addition of dithiocarbamates, thlurams, thiocyanates or sterically hindered amines to recording sheets comprising porous inorganic oxides to improve light stability.